AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A phase-locked loop (PLL) for producing a phase-locked oscillation, the PLL comprising:

a phase detection module for producing a current representing a phase difference between a feedback signal and a reference signal;

a loop filter operably coupled to receive the current and for converting the current into a control voltage; and

a voltage controlled oscillator (VCO) operably coupled to receive the control voltage at a VCO input and to produce an oscillation signal responsive to the control voltage wherein the oscillation signal is provided to the phase detection module in a first feedback loop, wherein:

the VCO further comprises a phase adjustment module for reducing phase noise in the oscillation signal, the phase adjustment module operably coupled to receive the oscillation signal and to produce a correction voltage to counteract a phase shift resulting from phase noise in the oscillation signal; and

wherein the correction voltage is provided to adjust the oscillation signal frequency in a second feedback loop <u>; and</u>

wherein the phase adjustment module further includes a plurality of sampling modules coupled to receive the oscillation signal, wherein each sampling module of the plurality of sampling modules samples the oscillation signal over a different time interval to produce a sampled voltage corresponding to a change in the period of the oscillation signal.

Claim 2. (Cancelled)

3. (Currently Amended) The PLL of claim [[2]] 1 further including a variable low pass filter coupled to receive the sampled voltage from the plurality of sampling modules, wherein the variable low pass filter produces a filtered voltage representing a running average of the received sampled voltage.

4. (Original) The PLL of claim 3 further including a plurality of operational amplifiers, each operational amplifier coupled to receive, at a first input, the sampled voltage produced from each sampling module of the plurality of sampling modules, and coupled to receive the filtered voltage at a second input, and wherein each operational amplifier produces an output signal representing a difference between the received sampled voltage and the received filtered voltage.

- 5. (Original) The PLL of claim 4 wherein each operational amplifier is configured as a transconductance amplifier wherein the output signal is a current signal.
- 6. (Original) The PLL of claim 4 wherein each operational amplifier is configured as a voltage amplifier wherein the output signal is a voltage signal.
- 7. (Original) The PLL of claim 4 further including a summing module operably coupled to receive the output signals from each operational amplifier of the plurality of operational amplifiers and to produce therefrom the correction voltage.
- 8. (Original) The PLL of claim 7 further including a phase logic module for controlling operational characteristics of the phase adjustment module.
- 9. (Original) The PLL of claim 8 wherein the sampling module of the plurality of sampling modules further includes a sampling logic module operably coupled to receive the oscillation signal and operably coupled to receive at least one control signal from the phase logic module.
- 10. (Original) The PLL of claim 9 further including a variable current source serially coupled to a switch which is serially coupled to a capacitor, the variable current source for charging the capacitor during a specified time interval.
- 11. (Original) The PLL of claim 10 further including a sampling amplifier coupled to receive a capacitor voltage and to produce a sampled voltage corresponding to the

period of the oscillation signal during the specified time interval.

12. (Original) The PLL of claim 11 wherein the sampling amplifier includes one of a fixed gain and a variable gain.

- 13. (Original) The PLL of claim 11 wherein the capacitor comprises a variable capacitor.
- 14. (Currently Amended) A VCO, comprising:

oscillation circuitry operably coupled to receive a control voltage at a VCO input and to produce an oscillation signal responsive to the control voltage;

a phase adjustment module for reducing phase noise in the oscillation signal, the phase adjustment module operably coupled to receive the oscillation signal and to produce a correction voltage to counteract a phase shift resulting from phase noise in the oscillation signal; and

wherein the correction voltage is provided to adjust the oscillation signal frequency; and

wherein the phase adjustment module further includes a plurality of sampling modules coupled to receive the oscillation signal, wherein each sampling module of the plurality of sampling modules samples the oscillation signal over a different time interval to produce a sampled voltage corresponding to a change in the period of the oscillation signal.

Claim 15. (Cancelled)

16. (Currently Amended) The VCO of claim [[15]] 14 further including a variable low pass filter coupled to receive the sampled voltage from the plurality of sampling modules, wherein the variable low pass filter produces a filtered voltage representing a running average of the received sampled voltage.

17. (Original) The VCO of claim 16 further including a plurality of operational amplifiers, each operational amplifier coupled to receive, at a first input, the sampled voltage produced from each sampling module of the plurality of sampling modules, and coupled to receive the filtered voltage at a second input, and wherein each operational amplifier produces an output signal representing a difference between the received sampled voltage and the received filtered voltage.

- 18. (Original) The VCO of claim 17 wherein each operational amplifier is configured as a transconductance amplifier wherein the output signal is a current signal.
- 19. (Original) The VCO of claim 17 wherein each operational amplifier is configured as a voltage amplifier wherein the output signal is a voltage signal.
- 20. (Original) The VCO of claim 17 further including a summing module operably coupled to receive the output signals from each operational amplifier of the plurality of operational amplifiers and to produce therefrom the correction voltage.
- 21. (Original) The VCO of claim 20 further including a phase logic module for controlling operational characteristics of the phase adjustment module.
- 22. (Original) The VCO of claim 21 wherein the sampling module of the plurality of sampling modules further includes a sampling logic module operably coupled to receive the oscillation signal and operably coupled to receive at least one control signal from the phase logic module.
- 23. (Original) The VCO of claim 22 further including a variable current source serially coupled to a switch which is serially coupled to a capacitor, the variable current source for charging the capacitor during a specified time interval.
- 24. (Original) The VCO of claim 23 further including a sampling amplifier coupled

to receive a capacitor voltage and to produce a sampled voltage corresponding to the period of the oscillation signal during the specified time interval.

- 25. (Original) The VCO of claim 24 wherein the sampling amplifier includes one of a fixed gain and a variable gain.
- 26. (Original) The VCO of claim 23 wherein the capacitor comprises a variable capacitor.
- 27. (Currently Amended) A method for producing an oscillation, comprising: receiving a control voltage and producing an oscillation signal responsive to the control voltage;

sampling the oscillation signal over a plurality of different time intervals to produce a sampled voltage corresponding to a change in the period of the oscillation signal;

filtering the sampled voltage from the plurality of sampling modules and producing a filtered voltage representing a running average of the received sampled voltage;

reducing phase noise in the oscillation signal by producing a correction voltage to counteract a phase shift resulting from phase noise in the oscillation signal; and producing the correction voltage to adjust the oscillation signal.

Claims 28-29. (Cancelled)

30. (Currently Amended) The method of claim [[29]] <u>27</u> further including producing a correction voltage representing a difference between the sampled voltage and the filtered voltage.